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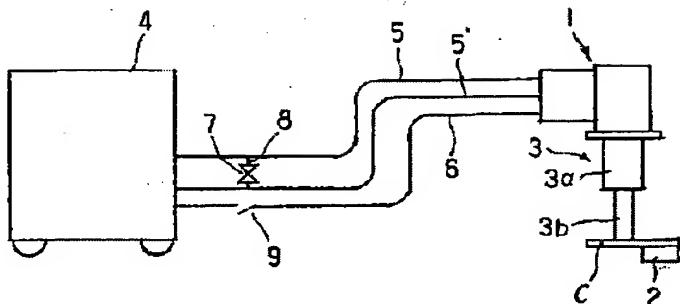
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APPLICANT : SUMITOMO HEAVY IND LTD;

INVENTOR : KOSEKI KATSUMI;

INT.CL. : F25B 9/14 F25B 9/00

TITLE : CRYOSTATIC REFRIGERATOR



ABSTRACT : PROBLEM TO BE SOLVED: To provide a cryostatic refrigerator suitable for cooling an apparatus which dislikes a vibration without generating a noise at a video without shortening a lifetime of a compressor by using an existing cryostatic refrigerator without replacing it with a deep freezing refrigerator having no drive component.

SOLUTION: The cryostatic refrigerator comprises a bypass circuit having a valve interlocked with a refrigerator power ON/OFF circuit and provided in a gas supplying/returning circuit for coupling a compressor unit to the refrigerator. Thus, even when the refrigerator is stopped, the compressor unit can be continued to be operated. Since the compressor is not frequently started and stopped, a large load is not applied to the compressor, and hence the lifetime of the refrigerator can be prolonged.

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CLAIMS**[Claim(s)]**

[Claim 1] The very-low-temperature freezer characterized by preparing the bypass circuit which has the bulb interlocked with a refrigerator power-source ON/OFF circuit all over the gas supply and the return circuit which has connected the refrigerator with the compressor unit.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to a very-low-temperature freezer.

[0002]

[Description of the Prior Art] In the infrared camera, the radio telescope, etc., cool storage type very-low-temperature refrigerators, such as the GM type refrigerator, are used for cooling of an image component etc.

Drawing 2 is an explanatory view in the condition of installing the cooled member 2 of an infrared camera to the thermal load station C of the 2 steps of GM type mold refrigerator 1, 3a is the 1st step cylinder of the two-step mold regenerator 3, and 3b is the 2nd step cylinder of two-step mold regenerator.

[0003] Although not illustrated in above-mentioned cylinder 3a and 3b, possible [reciprocation] under power The 1st step displacer, The 2nd step displacer is inserted, respectively and the change bulb which is interlocked with a displacer and operates is installed in the gas inlet of regenerator (not shown). The high-pressure gaseous helium from the compressor unit 4 is supplied to the regenerator 3 of a refrigerator 1 via the high pressure gas tubing 5. The low voltage gaseous helium from regenerator 3 was returned to the compressor unit via low voltage gas pipe 5', cooled the thermal load station C to very low temperature, and has cooled the cooled member of installation to this station. Six in drawing is the cable for current supply of a refrigerator.

[0004]

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TECHNICAL FIELD

[Field of the Invention] This invention relates to a very-low-temperature freezer.

[Translation done.]

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PRIOR ART

[Description of the Prior Art] In the infrared camera, the radio telescope, etc., cool storage type very-low-temperature refrigerators, such as the GM type refrigerator, are used for cooling of an image component etc.

Drawing 2 is an explanatory view in the condition of installing the cooled member 2 of an infrared camera to the thermal load station C of the 2 steps of GM type mold refrigerator 1, 3a is the 1st step cylinder of the two-step mold regenerator 3, and 3b is the 2nd step cylinder of two-step mold regenerator.

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[0004] However, in addition to this, it originated in movement of the driving parts in a refrigerator, the thermal load station C vibrated, and the cool storage type refrigerator 1 had the reciprocating motion of the displacer inserted, respectively into 1st step cylinder 3a of regenerator, and 2nd step cylinder 3b, and the trouble that a noise arose on the image of an infrared camera.

[0005] so, when cooling conventionally the equipment which dislikes vibration, vibration is made to avoid, when exchanging, the freezer, for example, the pulse tubing refrigerator, of a frozen method without driving parts like a displacer, or stopping operation of a refrigerator only at the time of observation -- it was melting.

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EFFECT OF THE INVENTION

[Effect of the Invention] Even if this invention stops a refrigerator, it can continue operation of a compressor unit, since it does not carry out the deactivation of the compressor frequently, giving a big load of it to a compressor is lost, and it does not reduce the life of a freezer during actuation of the equipment which dislikes vibration, such as an image component of an infrared camera, by having prepared the bypass circuit which has the bulb interlocked with a refrigerator power-source ON/OFF circuit all over the gas supply and the return circuit which has connected the refrigerator with the compressor unit. Furthermore, this invention can be installed to the existing freezer very simply easily, and can reduce an installation cost.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] This invention uses the existing very-low-temperature freezer, without exchanging for the refrigerator of a frozen method without driving parts, and the life of a compressor is not reduced and it aims at offering the suitable very-low-temperature freezer for cooling of equipment which dislikes vibration, such as not making an image produce a noise etc.

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MEANS

[Means for Solving the Problem] This invention is characterized by preparing the bypass circuit which has the bulb interlocked with a refrigerator power-source ON/OFF circuit all over the gas supply and the return circuit which has connected the refrigerator with the compressor unit.

[0008]

[Embodiment of the Invention] The operation gestalt of the very-low-temperature freezer concerning this invention is explained with reference to drawing 1. In addition, the same sign is given to the same components as well-known equipment among drawing, and duplication of explanation is omitted. It is characterized by for this invention having made the bypass circuit which consists of a by-path pipe 8 which has an electro-magnetic valve 7 form, and forming the refrigerator power-source ON/OFF circuit 9 at the refrigerator current supply cable 6 all over the gas supply and the return circuit which consists of a high pressure pipe 5 which has connected the compressor unit 4 and the refrigerator 1, and low-pressure pipe 5'. In addition, the electro-magnetic valve 7 and the refrigerator power-source ON/OFF circuit 9 which were established in the bypass circuit interlock, and he is trying to operate.

[0009] Next, an operation of this invention is explained.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The explanatory view of the operation gestalt of the very-low-temperature freezer concerning this invention.

[Drawing 2] The explanatory view of a cryogenic system well-known from the former.

[Description of Notations]

- 1 Refrigerator 5 High Pressure Gas Tubing
- 2 Cooled Body 5' Low Voltage Gas Pipe
- 3 Two-Step Mold Regenerator 6 Cable for Refrigerator Current Supply
- 3a 1st step cylinder 7 Electro-magnetic valve
- 3b 2nd step cylinder 8 By-path pipe
- 3 Cold Reserving Material 9 Refrigerator Power-Source ON/OFF Circuit
- 4 Compressor Unit C Thermal Load Station

[Translation done.]

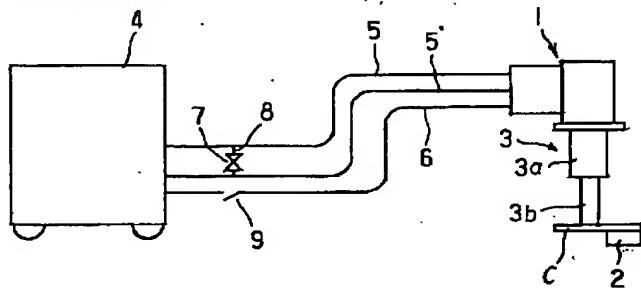
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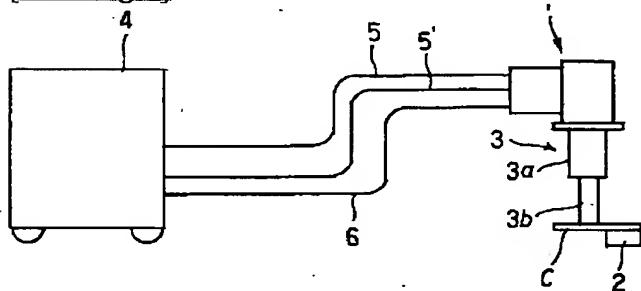
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DRAWINGS

[Drawing 1]



[Drawing 2]



[Translation done.]